

Management Science Associates, Inc.

November 8, 2004



Research Gateway: Putting it all together

A discovery platform for disparate data sources.

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2004S-0233

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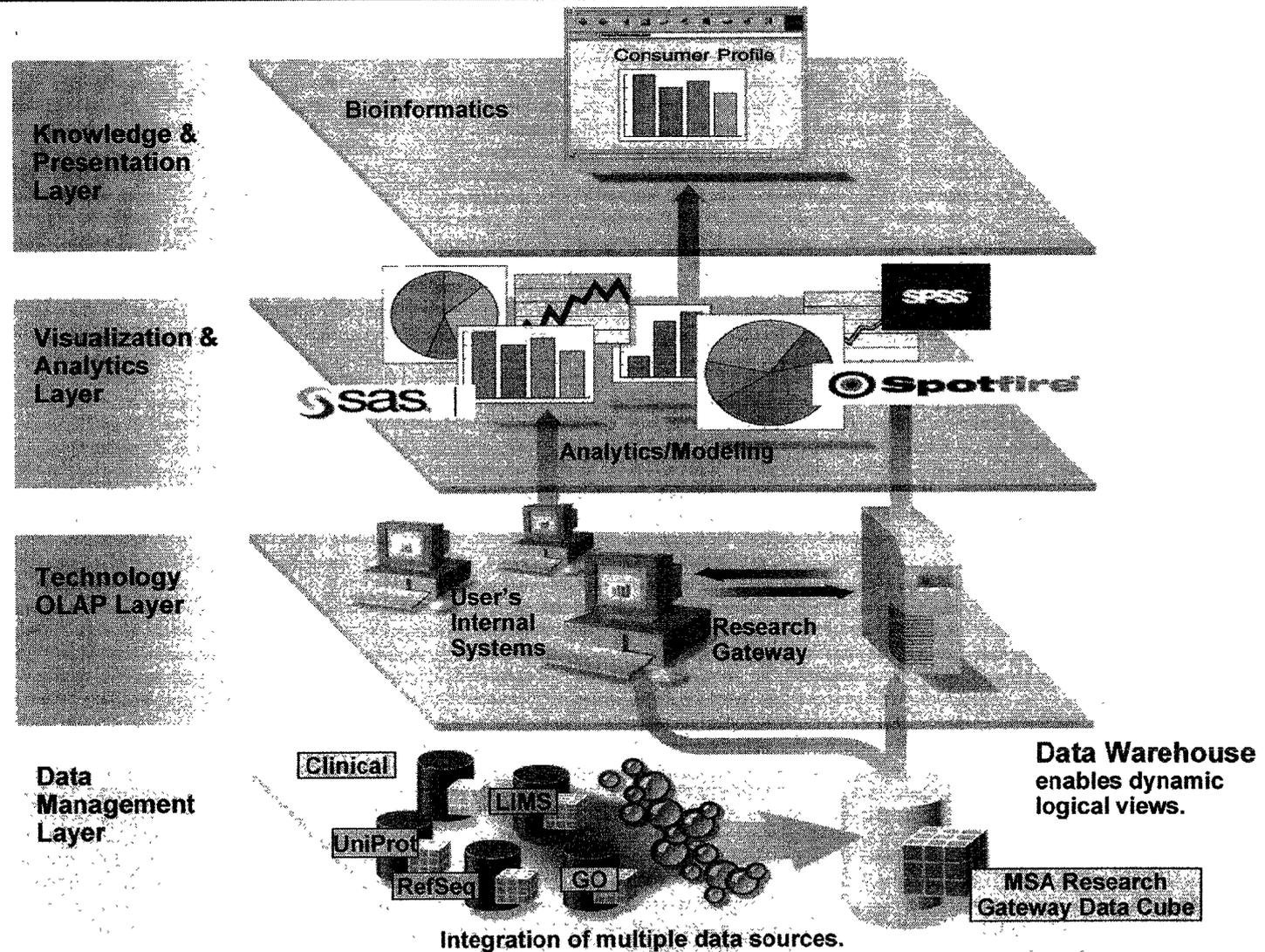


Medical Research

- Ever-increasing amounts of generated research data.
- Difficulty analyzing volumes of data.
- Data rarely viewed in an integrated way – if at all.
- Data often generated & stored at multiple locations and in multiple formats.
- Researchers across the nation need access to the same data at the same time.

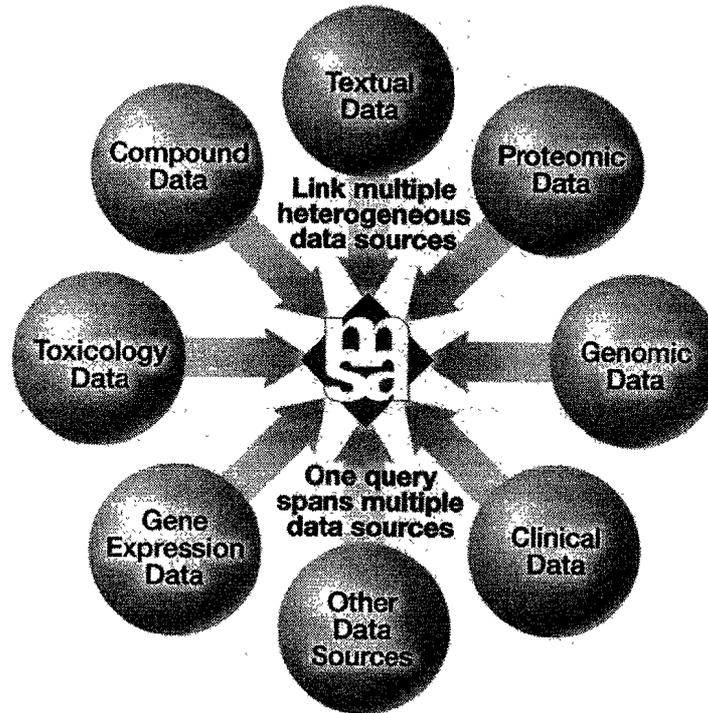
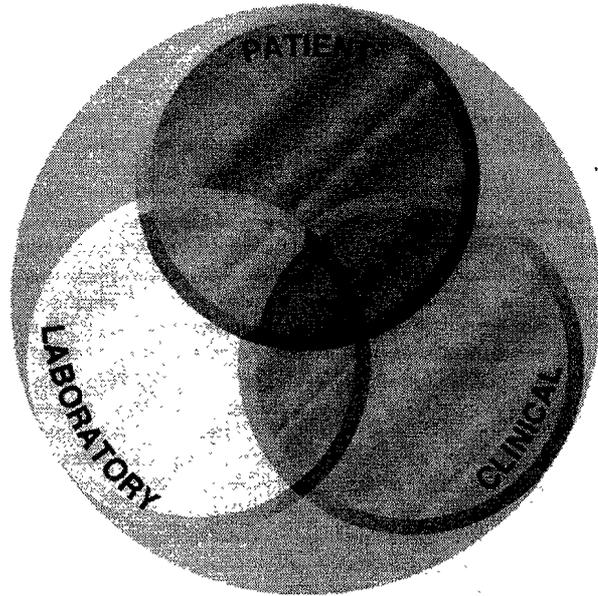


MSA's Information Vision



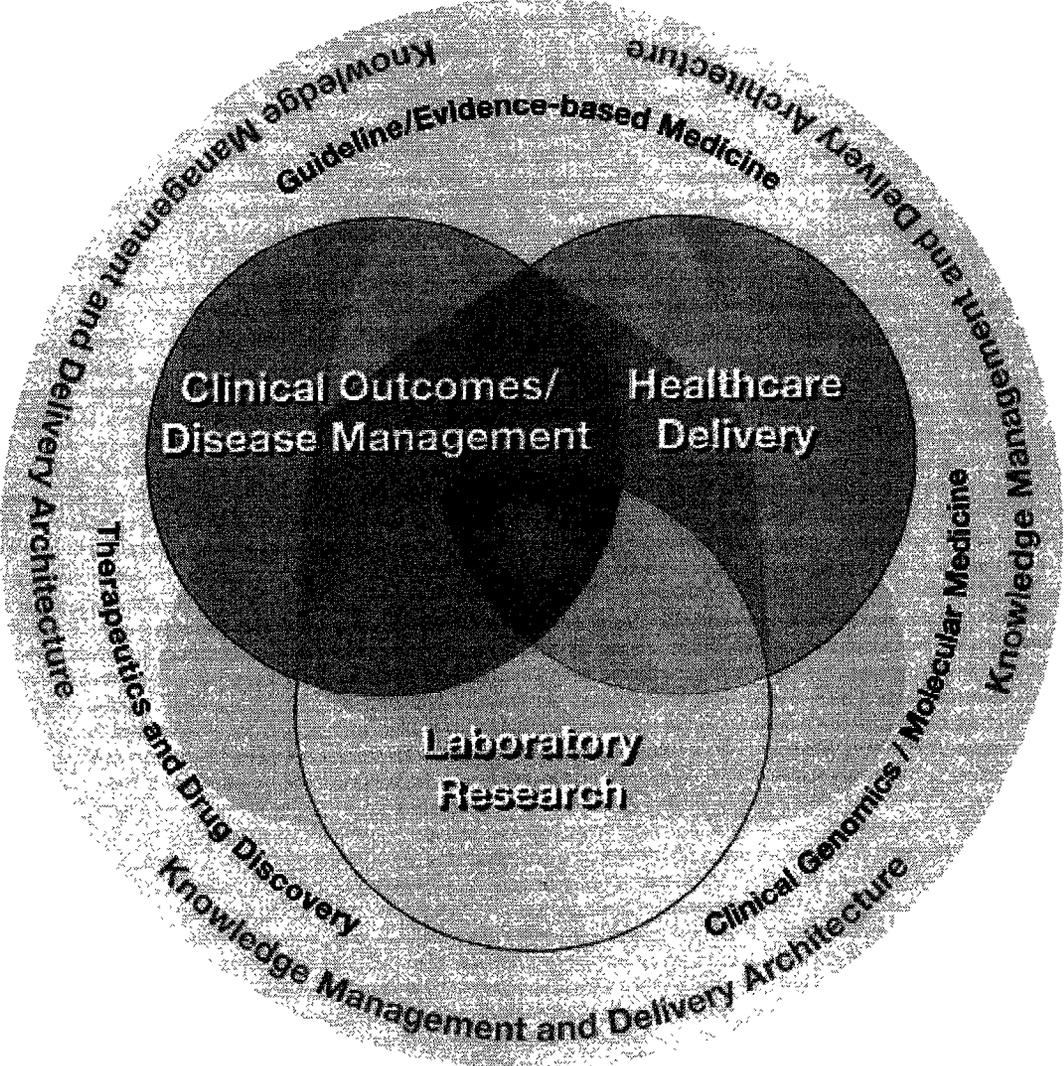


Problem 1: Disparate Data Sources



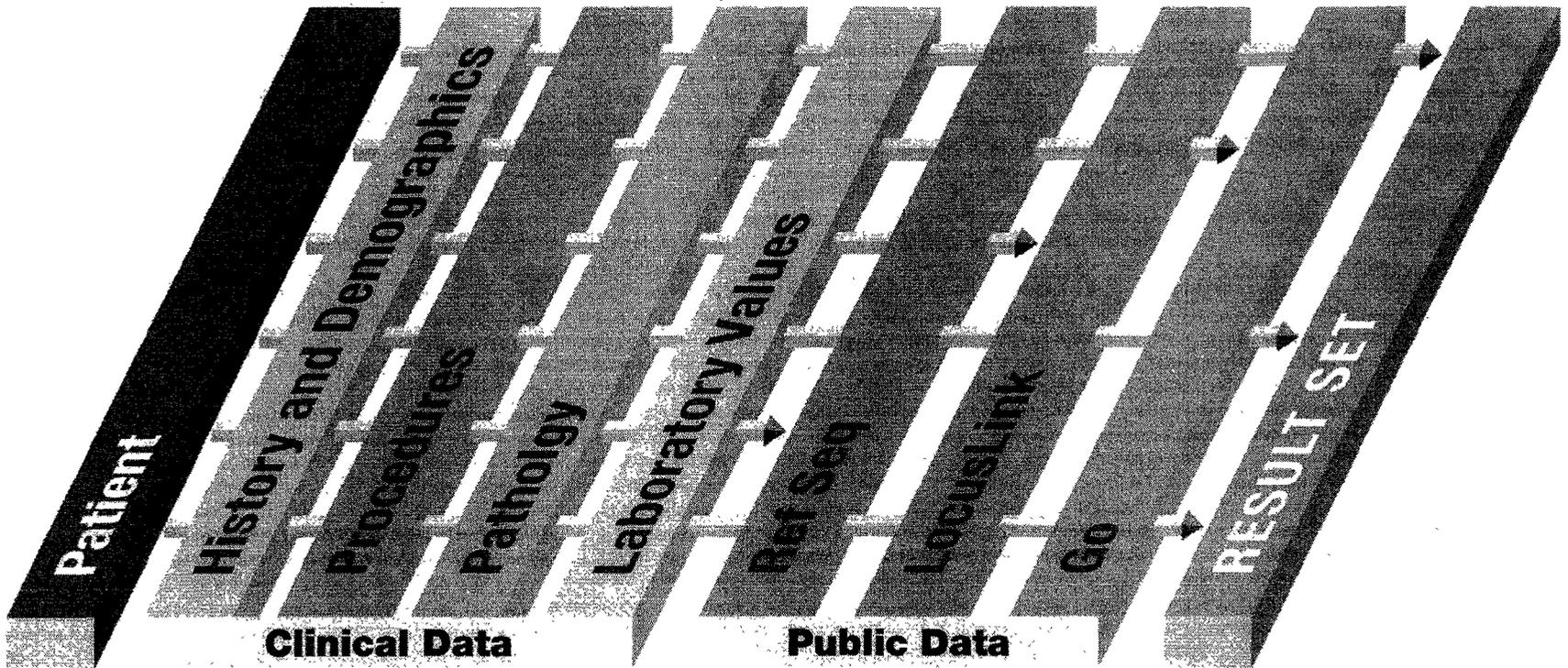


Functional Integration





Patient Centric View





Problem 2: Accessing the Data

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SELECT "PATIENT"."GENDER_CD", "PATIENT"."PATIENT_ID",
"PATIENT_PREGNANCY"."PREGNANCY_QTY", "PATIENT_BCNTL"."BCNTL_PILL_NM",
"PATIENT_BCNTL"."BCNTL_PILL_LAST_USE_AGE",
"PATIENT_BCNTL"."BCNTL_PILL_FIRST_USE_AGE", "PATIENT_PATH"."PATH_CAT_CD",
"PATIENT_PATH"."ORGAN_LOCATION_CD", "PATIENT_MENSTR"."MENSTR_STRT_AGE",
"PATIENT_MENPSL"."MENPSL_STRT_AGE", "PATIENT_HORMN_REPL"."HORMN_REPL_TYPE_DSC",
"PATIENT_HORMN_REPL"."HORMN_REPL_TTL_ANT",
"PATIENT_HORMN_REPL"."HORMN_REPL_LAST_USE_AGE",
"PATIENT_HORMN_REPL"."HORMN_REPL_FIRST_USE_AGE",
"PATIENT_PHYS_HIST"."FAT_INT_SCORE_NBR", "PATIENT_PHYS_HIST"."CAFF_INT_SCORE_NBR",
"PATIENT_PHYS_HIST"."BODY_MASS_INDEX_NBR", "PATIENT_HIST"."ED_LEVEL_CD",
"PATIENT_HIST"."MARITAL_STAT_CD", "PATIENT_HIST"."OCCUPATION_DSC",
"PATIENT"."BIRTH_DT", "PATIENT"."AGE", "PATIENT_ID"."PATIENT_COUNT" FROM "PATIENT_ID",
"PATIENT", "PATIENT_PREGNANCY", "PATIENT_BCNTL", "PATIENT_PATH", "PATIENT_MENSTR",
"PATIENT_MENPSL", "PATIENT_HORMN_REPL", "PATIENT_PHYS_HIST", "PATIENT_HIST"
WHERE
("PATIENT_ID"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_PREGNANCY"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_BCNTL"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_PATH"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_MENSTR"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_MENPSL"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_HORMN_REPL"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_PHYS_HIST"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID"
"PATIENT_HIST"."PATIENT_ID"="PATIENT_ID"."PATIENT_ID")

```

Information Broadcasting

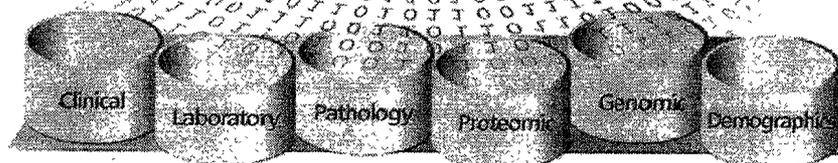
- Clinical/Biological Focus
- Simple browser accessibility
- Web Server and Client Architecture
- Multi-User Support
- Access any ODBC compliant database

Ad-Hoc Analysis

- Multidimensional Conceptual View (slice and dice)
- Intuitive Data Manipulation
- Easy Drag-and-Drop Interface
- Calculates on demand
- Derive new parameters with applied algorithms

Research Gateway

Customization Layer





Research Gateway

Basic Features

- ◆ Multidimensional Conceptual View (slice and dice)
- ◆ Intuitive Data Manipulation
- ◆ Accessibility: All you need is a browser
- ◆ Pre-calculated aggregations
- ◆ Calculates fields “on the fly”
- ◆ Applies models and algorithms for deriving new parameters
- ◆ Web Server and Client Architecture
- ◆ Transparency (All work is done behind the drag and drop interface.)
- ◆ Multi-User Support



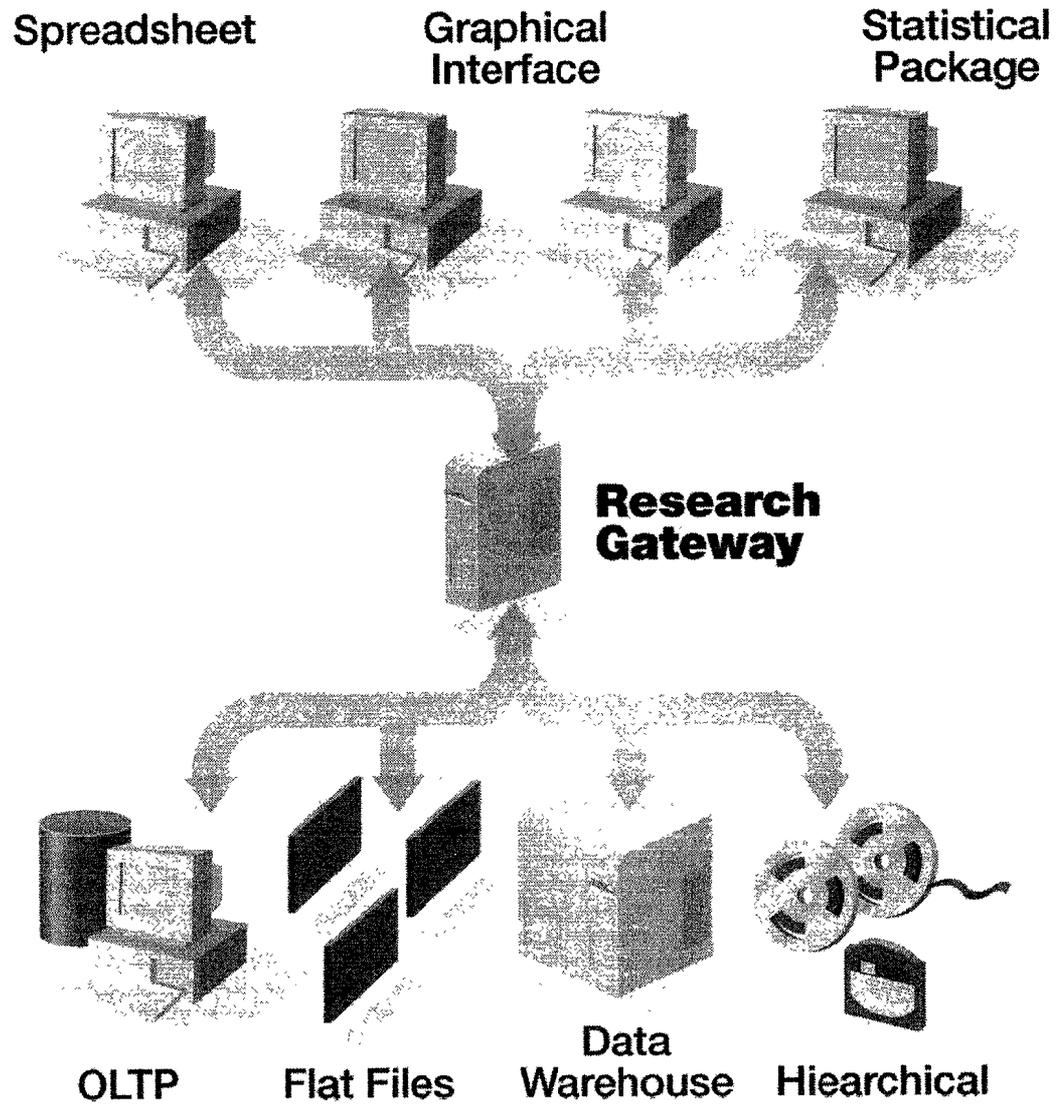
Research Gateway:

How Does this Help Researchers?

- ◆ The Research Gateway empowers the end-user to satisfy their own data requirements.
- ◆ Users can subset the data according to their own criterion.
- ◆ Users can interrogate, experiment and explore with various data and aggregations.
- ◆ All this can be done on demand without support from database administration.
- ◆ The Research Gateway acts as an integrator between the different data sources and various data types to produce a final result set.

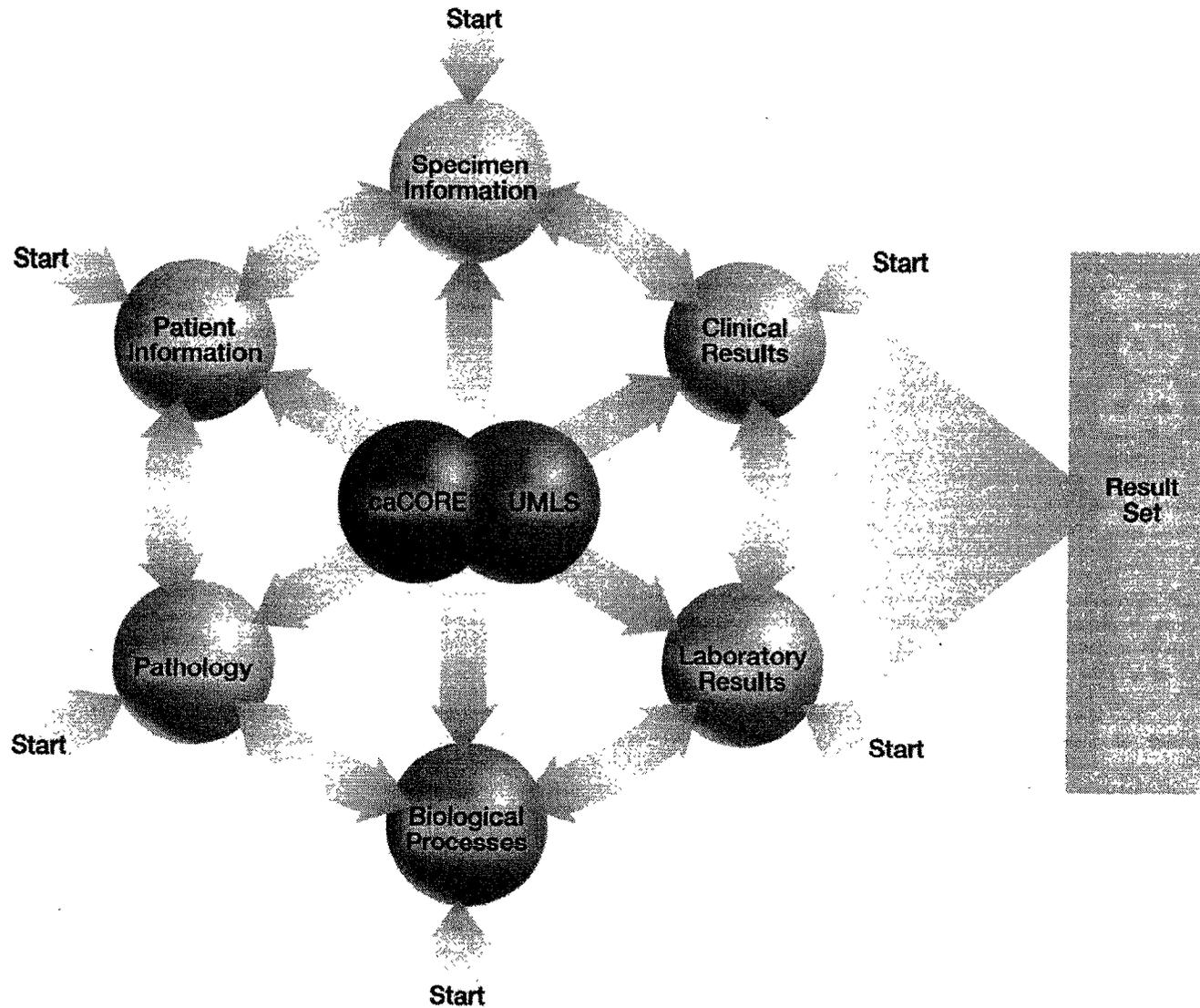


Integrating All Types of Databases



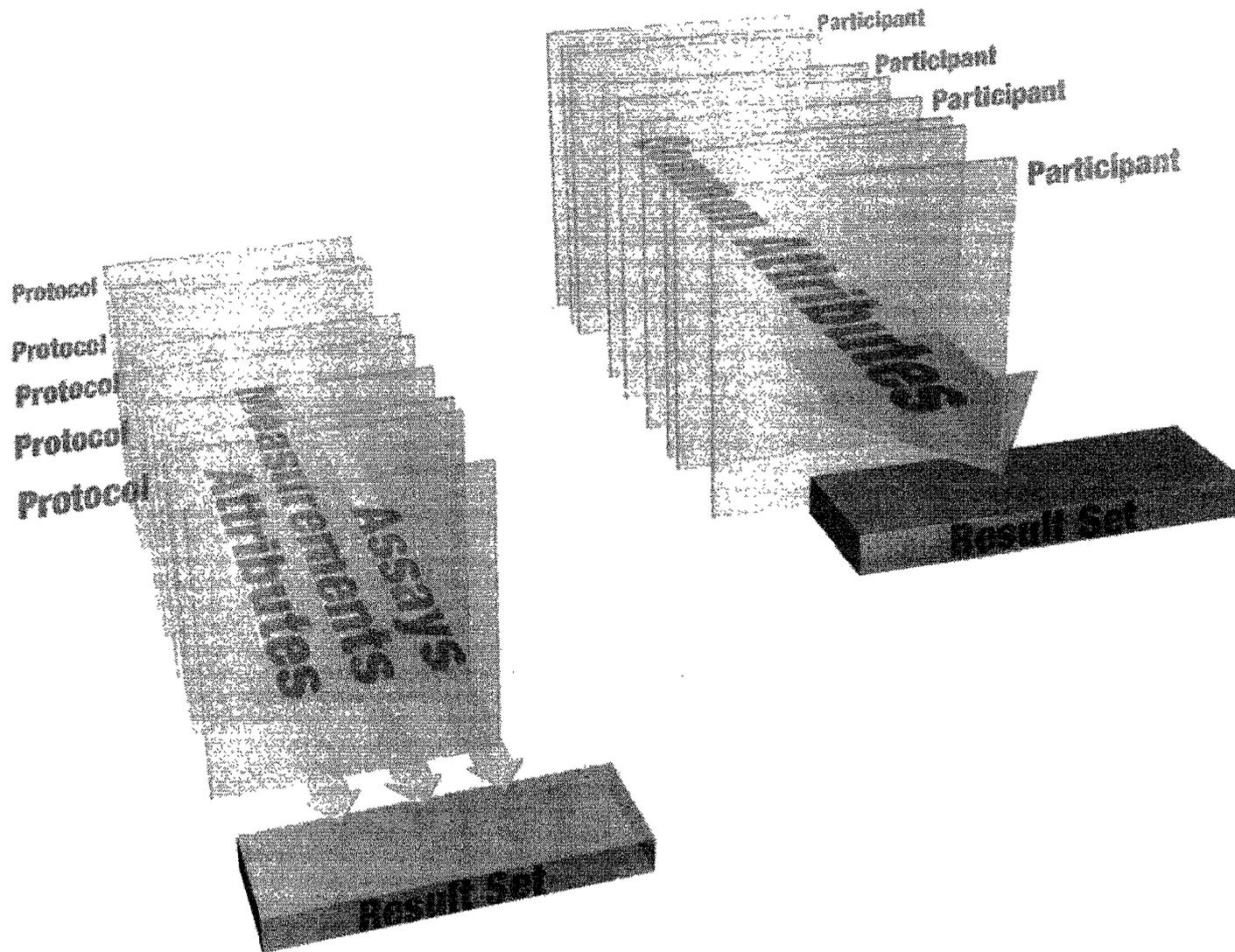


The Power to Explore





Integrated Attributes





Research Gateway: Subset the Data

The screenshot shows a web browser window displaying the Research Gateway Data Browser. The browser's address bar is empty, and the page title is "Research Gateway Data Browser". The navigation menu includes "Home", "Study Status", "Explore Data", "Results", "Discussion", and "Admin". The "Explore Data" section is active, showing a list of filters and a table of results.

Explore Data

Count Field Name Count

Filter	Count
Patients	25

Filter

- Protocol
- Visit
- Sites
- Trt Grp
- Disease Area
- Trial Type
- Organizations
- Assays
- Sex
- Primary Race
- Secondary Race
- Ethnicity

Protocol Design

- Patient
- Protocol
- Visit
- Sites
- Trt Grp
- Disease Area
- Trial Type
- Organizations
- Assays

Patient Demographics

- Sex
- Primary Race
- Secondary Race
- Ethnicity

Vital Signs

Site

Sites	Count
<input type="checkbox"/> 001	
<input checked="" type="checkbox"/> 002	
<input type="checkbox"/> 003	

Sex

Sex	Count
<input checked="" type="checkbox"/> Female	
<input type="checkbox"/> Male	

Primary Race

Primary Race	Count
<input type="checkbox"/> American Indian or Alaska Nati	
<input type="checkbox"/> Asian	
<input type="checkbox"/> Black or African American	
<input type="checkbox"/> Other	
<input checked="" type="checkbox"/> White	



Tabular View: Multiple Assays Over Time

File Edit View Favorites Tools Help

Welcome admin! Portal Home Edit Your Profile Logoff

Research Gateway Data Browser

Home Study Status Explore Data Results Discussion Admin

File Tools Addins Help

Windber Folder DATA - Cube: N70, View: Unfiled, Viewer: Office Web Component

Folder: MSA Filter By: Published

- Clinical
- Common
- Elisa
- Flow
- RTPCR
- RT-PCR_Flow_CellDeath

Measure	Indicator	Indicator Measure Description	Visit Name				
			01	00	01	02	
Flow Rec T Helper	CD	CD4+ CXCR3+ CD8+CCR5	RT_ddct	0	0	0	0
		Avg_FL_Absolute	5.10857167	15.70571443	17.70428591	43.351	
Flow Rec T Helper	CD	CD4+ CXCR3+ CD8+CCR5	RT_ddct	0	0	0	0
		Avg_FL_Absolute	0.497142846	3.10571424	2.895714244	3.8985	
RT-PCR	cell death	CASP1 AAU00236158m1	RT_ddct	0	-1.869357473	1.47389217	-3.4857
		Avg_FL_Absolute	0	0	0	0	
RT-PCR	cell death	CXCR4 AAV00237052m1	RT_ddct	0	-6.655534023	-0.196146296	-1.4766
		Avg_FL_Absolute	0	0	0	0	
RT-PCR	cell death	IL10 AAU00174006m1	RT_ddct	0	-1.917157732	-0.899553682	-3.7733
		Avg_FL_Absolute	0	0	0	0	
RT-PCR	cell death	IL2 AAU00174114m1	RT_ddct	0	0.31578689	2.102199623	2.2234
		Avg_FL_Absolute	0	0	0	0	
RT-PCR	cell death	LTA AAU00236874m1	RT_ddct	0	-6.207547557	0.719261162	16.110
		Avg_FL_Absolute	0	0	0	0	

Done Local intranet



Graphical View: Multiple Assays Over Time

